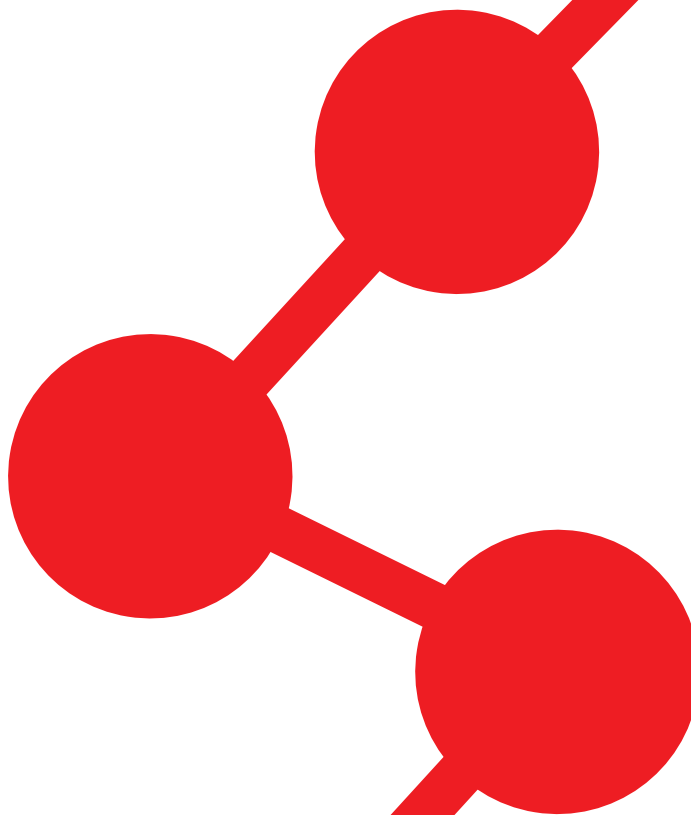


Understanding the impact of the connected revolution



Vodafone
Power to you



Introduction

With competitive pressures intensifying and the pace of innovation accelerating, recognising key trends, understanding their implications and, where appropriate, responding decisively is essential to remain successful. Vodafone has created five insight papers which discuss many significant business and technology trends shaping Enterprises today and into the future. We discuss their implications and make recommendations as to the steps businesses need to take.

- **The new customer relationship in the digital age**
- **The rise of the borderless enterprise**
- **Understanding the impact of the connected revolution**
- **The changing role of the IT department in a cloud-based world**
- **The importance of mobility for tomorrow's enterprise**

This paper describes our thinking relating to understanding the impact of the connected revolution. If you are interested in topics such as the growth of the Internet of things and machine-to-machine (M2M), the opportunity it represents for businesses and the requirements for success, then you will find this of interest.

Executive Summary

The combination of advanced machine-to-machine (M2M) technologies, ubiquitous connectivity and advanced data analytics techniques will have a transformative impact on businesses, sectors and societies.

This connected revolution has the potential to be a major engine of growth for the world economy, enabling more efficient use of resources, reducing carbon consumption, automating many routine manual tasks and delivering enhanced experiences for customers.

Fundamental to the connected revolution is the ability to connect any device and ensure a seamless flow of information at all times. This will help businesses make real-time, data-driven decisions to solve real business problems.

Whatever their size, those businesses that are quick to identify the opportunities of the connected revolution will gain a significant competitive advantage. Those that are slow to react will find themselves threatened by more innovative competitors.

As data collection and decision-making become increasingly automated, firms will face new challenges in ensuring that they act in ways that are ethically, commercially and legally sound. Minimising data management, security and privacy risks will require a new approach to governance.

What is M2M?

The term M2M (Machine-to-machine) refers to technologies that enable machines, devices and appliances to communicate with each other via wired or wireless communications links without the need for human intervention. M2M is linked to the wider term, the Internet of things, technology which enables physical objects to communicate and sense or interact with their internal states or the external environment.

The connected revolution

Transformational impact

Rise of M2M

New business opportunities

Sustainability benefits



Analytics skills key

Governance challenges

New security risks

Standardisation essential

The connected revolution

The connected revolution will transform business and society

The connected revolution – the combination of M2M technology, ubiquitous connectivity, increased data gathering and advanced data analytics – promises huge gains in efficiency and productivity for businesses and societies. It has the potential to be a major engine of growth for the world economy.

A Cisco study forecast that the 'internet of everything' could add \$14.4 trillion to the global economy by 2023.¹ Cisco defines the Internet of Everything (IoE) as bringing together people, process, data, and things to make networked connections more relevant and valuable than ever before, which is a key component of the connected revolution.

The opportunity exists to connect almost any device with an IP address – from cars to health monitors to home appliances – and get detailed, real-time information back. This represents arguably the single most exciting development ever in communications. And the possibilities for forward-looking businesses are seemingly endless.

The connected revolution has the potential to enable more efficient use of scarce resources, automate many routine manual tasks, deliver enhanced experiences to customers, and both improve and accelerate decision-making.

The Rise Of M2M

As the costs of M2M technology and connectivity and data storage fall, we're likely to see a rapid acceleration in the adoption of these technologies over the next five years.

Vodafone's global M2M Adoption Barometer found that 78% of enterprise executives questioned expect M2M to be at the core of successful businesses in the future. Over half expect to have live M2M initiatives within the next 2 years.

Companies that are slow to act will not only lose a competitive edge, but are also likely to find their existence threatened by more innovative competitors.

Applications of M2M

The applications of M2M technology are varied. Some examples include:

- Logistics – monitoring and tracking vehicles and their loads to improve the efficiency of logistics operations by utilising vehicles more fully
- Smart metering – remote monitoring and control of energy meters, eliminating the need for field visits to collect meter readings and helping shift energy consumption away from peak demand periods
- Traffic management – using sensors to monitor traffic volumes and speed and then using this information to automatically manipulate traffic control devices (e.g. traffic lights, variable flow lanes) to maximise traffic flow
- Health – connected devices enable remote monitoring of patients' conditions, cutting down the need for hospital visits and enabling potential issues to be quickly identified and addressed



78% of enterprise executives expect M2M to be at the core of successful businesses in the future.

Source: Vodafone M2M Adoption Barometer, 2013 Report

The connected revolution represents arguably the single most exciting development ever in communications.

¹ Cisco White Paper: 'Embracing the Internet of Everything To Capture Your Share of \$14.4 Trillion'. Feb 2013

The opportunities are wide-ranging and impact all sizes of business

To reap the benefits of the connected revolution, businesses need to re-evaluate their supply chains, internal operational processes, the experience they provide for their customers and their use of assets. Those businesses that are quick to identify the opportunities will gain a significant competitive advantage.

The connected revolution will affect companies of all sizes, in all regions and across all sectors. It could level the playing field between large and small companies: for example, small companies could gain the insights and the scalability that has previously only been available to large companies. Conversely, larger companies could achieve the levels of agility and responsiveness that have traditionally been the domain of smaller businesses.

Deploying M2M helps address sustainability concerns

By dramatically improving the use of resources and reducing carbon consumption, the increasing take-up of M2M and analytics technologies could deliver massive sustainability benefits to business and society. Carbon-reducing applications for M2M technology are wide-ranging – from improving energy efficiency through real-time monitoring and control of energy-hungry processes, to eliminating the need for travel by enabling remote monitoring of stock levels, for example in vending machines.

By 2020, smart applications enabled by wireless M2M have the potential to reduce carbon emissions by 90 Mt CO₂e² and energy costs by €34 billion a year, according to a report jointly published by Vodafone and Accenture. The two areas that could see the biggest benefits are the smart energy grid and smart logistics.³

Businesses should explore the benefits of M2M now to support their Corporate Social Responsibility (CSR) credentials and safeguard their long-term sustainability.

Although the connected revolution offers many opportunities and potential benefits to businesses, it also carries with it numerous challenges. These include accessing the right skills, putting in place the right governance models and ensuring the right levels of security. These challenges are discussed more fully below.

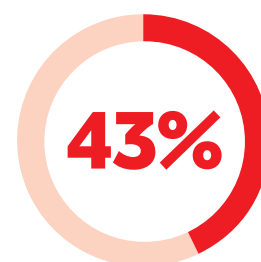
Analytics skills will be vital to harness the new wave of information

In the connected revolution, it's not just the ability to aggregate and analyse data that's important: it's also the ability to identify the right questions to ask and the right actions to take as a result.

Having lots more data and powerful analytical tools doesn't in itself create value. The value comes from being able to achieve new insights – and use those insights to make better and faster decisions and execute those decisions faster. According to 43% of respondents to the Vodafone M2M Barometer who have already launched projects, faster decision-making is the number one benefit achieved by early adopters of M2M technology.⁴

Rather than just collecting lots of data and trying to work out what to do with it, businesses need to think carefully about which insights would bring them the most benefits.

Data analytics will become more important for organisations and demand for people with strong data analytics skills will increase. Firms need to ensure they have the resourcing strategies in place to deliver the required analytics skills. A 2012 survey⁵ found that the top barrier blocking the adoption of analytics was having too few people with the right mix of IT and business knowledge. A separate study predicted that in the US alone there will be between 140,000 and 190,000 unfilled data analytics positions by 2018 and a shortage of 1.5 million managers and analysts who have the ability to understand and make decisions using big data.⁶



43% of respondents who have already launched projects, found that faster decision-making is the number one benefit achieved by early adopters of M2M technology.

Source: Vodafone M2M Barometer Report, 2013

² Million metric tons of carbon dioxide equivalent

³ Vodafone & Accenture – Carbon Connections Report, 2009

⁴ Vodafone M2M Barometer Report, 2013

⁵ IBM 2012 Tech Trends Report – 'Fast track to the future'

⁶ McKinsey Global Institute – 'Big data: The next frontier for innovation, competition and productivity', 2011

Vodafone Group Enterprise

Understanding the impact of the connected revolution

Define the right rules and policies governing automation will become critical to how well businesses perform.

Organisations must identify the right governance of automation

As technology enables decision-making to be increasingly automated, the ability to define the right rules and policies governing automation will become critical to how well businesses perform.

While the ability to automate many decisions and tasks offers huge potential benefits, it also poses significant risks if these new capabilities are not deployed judiciously. This is particularly pertinent for customer-facing processes: organisations risk losing customer trust if these technologies are not felt to be secure, transparent and proportionate.

Defining the rules and policies that govern automated decisions will be a critical function and will need constant re-evaluation.

New Security Risks

The connected revolution also creates new and challenging security risks for businesses. These risks require new approaches to mitigation and prevention.

The new security challenges arise as a result of the massive rise in the number of endpoints that need to be secured and the exponential increase in the volume of data being processed.

A 2012 survey of M2M industry experts and suppliers identified end-to-end security as the top priority in delivering M2M projects.⁵

In addition, the increased use of automated decision-making can amplify the impact of security breaches. So organisations need to take a holistic approach to security and risk management that includes their M2M initiatives. They need to focus not just on protecting devices and networks, but also on how they can mitigate the impact of security breaches.

Common standards are needed

Agreeing common standards within the M2M industry will be key to realising the full potential benefits of the connected revolution. Without common ground, not only will benefits be missed, but a proliferation of proprietary technologies will create increased complexity, confusion and cost for customers.

It's no surprise that the lack of common industry standards was the primary justification given by those who have considered M2M and decided not to press ahead at the moment.⁶ So it's essential that the industry, customer groups and governments work together to agree common standards.

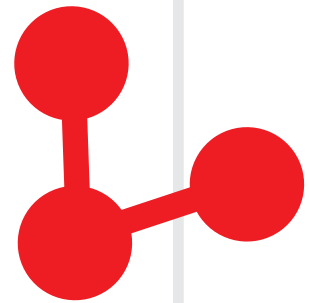
The increased use of automated decision-making can amplify the impact of security breaches.

⁵ Beecham Research/Oracle – Designing an M2M Platform For The Connected World, 2012

⁶ Vodafone M2M Barometer Report, 2013

Businesses must act now to stay ahead

The transformative potential of M2M, connectivity and data analytics cannot be ignored – the connected revolution is on its way.



Businesses must re-evaluate their supply chains, internal operational processes, the experience they give their customers and their use of assets in order to take full advantage of the connected revolution.

By embracing what M2M and analytics technologies offer, businesses can significantly improve their performance.

But businesses will need to have the right resourcing strategies in order to benefit from the potential of data analytics. They must also identify the insight that will deliver the greatest benefits to their business and focus on initiatives that can deliver real business value.

To safeguard customer trust, organisations need to ensure they have effective policies and processes to govern data collection and automated decision-making. They must implement a holistic approach to security and risk management that covers their M2M initiatives.

Finally, companies must put pressure on vendors and regulatory bodies to ensure there are common standards in place for M2M technologies.

Why Vodafone?

Better Operational Agility

To make your business more agile, we make the way you communicate more flexible, more resilient and more secure. We ensure all your different ways and means of communicating work together seamlessly. And we make sure all this combines to make your business more efficient and more profitable.

Better Customer Engagement

We help you grow by enabling you to give your customers a consistent, better experience across all contact channels – an experience that increases satisfaction and loyalty. We also help you take full advantage of the latest communications technology so that you can develop attractive and rewarding new products, services, routes to market and business models.

Better Connected Employees

We help you be more productive, improve employee engagement and get to market faster by enabling your employees to work how, when and where they need to, whilst ensuring you keep control of usage, costs and security.

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